sufficiently great to bring about a pronounced appearance of creeping. Crudely speaking, it appeared as a gigantic serpent writhing its way across the heavens. The path was sinuous to a slight degree, and after the body of the meteor had passed, a faint smoky glowing train appeared to waver back and forth in minute oscillations, lingering for nearly two seconds after the meteor had vanished. Observations were made as accurately as possible under the circumstances and figure 1 presents the track of the meteor with relation to the horizon, as observed at Fort Worth, Tex., (Lat. 32° 43′ N.; long. 97° 15′ W.), and at Denton, Tex., 29 miles north-northeast of here. Figures 2 and 3 show five positions of the train during the very brief periods of time elapsing, as observed at this place and at Denton, Tex.

Mr. John W. Crain, observer for the Weather Bureau at Denton, Tex., makes the following report, in company with the drawings:

The meteor was exceptionally brilliant at this place and attracted much attention. I remember distinctly that the train was present several seconds (?) after the meteor had vanished, and that it glowed like the light of a firefly. At its maximum stage of brilliance, probably two seconds after the meteor had vanished, it seemed to dart out suddenly toward the west and then withdraw only to dart out again, almost at right angles to the path of the meteor.

Mr. Clem C. Gordon, observing the meteor at Brownwood, Tex., kindly sent in the following report:

I was sitting in my yard, the night being very warm, when about 9 o'clock I saw a strange sight. A star was apparently creeping across the sky, leaving a long flaming tail behind it. For a moment I thought it to be a rocket set forth by some overzealous patriot, but it dipped far down into the northeast before it vanished. The white trail was marked for some seconds by a vaporous mist which seemed to sag heavily earthward several times. I remarked * * * how much like a snake it seemed in its motion. As far as I can recollect, the star was at all times white, without any show of other color at any time.

Detailed observations are enumerated herewith:

	Denton, Tex.	Fort Worth, Tex.
Hours observed	$9^h 11^m 30^s$.	$9^h 11^m 30^s$.
Magnitude	First.	First.
Color	Green.	White.
Duration	1 second.	1.2 seconds.
Duration of train	0.6 second.	1.5 seconds.
Beginning of meteor:		
Altitude	33°	48°
Azimuth	323°.	328°.
Ending of meteor:		
Altitude	20°.	27°.
Azimuth	340°.	352°.

OBSERVATIONS OF THE TRAIN.

Denton, Tex.: Point at which train first appeared—Altitude 28°, azimuth 328° to altitude 23°, azimuth 334°. Moved slightly to the west, probably 1°.

Fort Worth, Tex.: Point at which train first appeared—Altitude 41°, azimuth 335° to altitude 34°, azimuth 340°. No east-to-west motion observed, other than shown on figure 3.

The skies were practically cloudless at the time of observation.

OBSERVATIONS OF METEOR TRAINS.

The columns of the REVIEW have already offered many instructions to those whose interests lead them to carefully observe meteors and their trains or streaks. Several observations of such trains, with remarks concerning their significance to the student of the uppermost atmospheric currents, have also been published. The recent meteor reports by Jaqua, Whitfield, and H. H. Martin show that intelligent interest in these lofty "upper air anemometers" is increasing, and as accurate observations are a sine qua non in this work the Editor here reprints some guiding remarks by C. C. Trowbridge,[1] and would again draw attention to his paper on the importance of these observations.

A. *Observations concerning the meteor nucleus.*

(1) Time of appearance of meteor nucleus and of duration of its flight.

(2) Radiant point and name of meteor (Leonid, Perseid, etc.).

(3) Color of nucleus, length of track, and length of portion of streak with respect to the entire track.

B. *Observation of the persistent train or streak.*

(4) Color of train immediately *after* disappearance of nucleus and any *change of color* of the train during the time that it is visible.

(5) Length and width of train, in degrees and minutes of arc, immediately after disappearance of nucleus, and its position in the heavens with respect to easily identified stars.

(6) Observations at short intervals of time, of the change of dimensions of the train in degrees, accompanied by a series of drawings if possible, indicating the successive changes in shape of the train. *The width of the train*, or a portion of it, *at successive intervals of time*, is of the greatest importance since it indicates the *rate of diffusion of the gaseous mass.*

(7) The displacement or drift of the train, in degrees, with corresponding time. For this purpose some *bright portion of the train* should be selected *when the train* is first seen. Also the direction of the drift *with* respect to the earth's surface, and if calculations are made of the rate in miles they should be so stated.

(8) If the intensity of the light of the train is (*a*) uniform, (*b*) brightest on the outside, (*c*) or brightest at the center; and the time of this observation after the first appearance of the meteor.

(9) Whether the train increases in brightness, this effect appears to occur not infrequently. The observer should be careful not to mistake an increase in the dimensions of the train for an increase in intensity.

(10) Spectroscopic observations, looking for the presence and position in the spectrum of one yellow line and one or two lines in the green.

(11) How long the train is visible to the naked eye, and how long visible in the telescope.

Systematic and accurate observations of persistent meteor trains will in all probability lead to results of much practical value. It is within reason to hope that light may be thrown on the following problems:

(1) The cause of the apparent self-luminosity of the meteor train.

(2) The height of the earth's atmosphere, by accurate measurement of telescopic trains.

(3) The density of the earth's atmosphere at an altitude of 50 to 65 miles, by a direct comparison with the pressure at which gas phosphorescence can occur if the meteor train is an "afterglow."

(4) The direction and velocity of currents in the atmosphere at great altitudes [unattainable by earthly means].

(5) The possible relation of atmospheric motion at high altitudes to barometric pressure, and some other facts which seem indicated by the statistical work already done, requiring further data for confirmation.

[1] *From* the MONTHLY WEATHER REVIEW, January, 1909, 37: 13.